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# **Disease Management Programs in Cardiology: Extending the Success in Failure**

**Running title:** *McMurray; Disease management programs in cardiology*

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The tremendous success of cardiology has led to symptomatic cardiovascular disease developing later in life and the prolongation of survival when clinically overt disease does develop.<sup>1-4</sup> As a result, even though age-adjusted incidence of cardiovascular problems may be falling, the prevalence of many is increasing because of lengthening survival.<sup>1-4</sup> Even cardiac conditions that were once relatively acute in onset and often rapidly fatal have now become chronic diseases.<sup>5,6</sup> Our clinics and wards in the more developed regions of the world are full of increasingly elderly patients with multiple chronic cardiovascular and other problems, often treated with an even larger number of pharmacological therapies.<sup>7</sup> In parallel with these staggering demographic changes, cardiology and medicine in general has changed. Cardiology has become more and more technology driven and the delivery of medical care has become increasingly disjointed. Doctors feel they have less time to offer their patients and patients are often bewildered by the variety of specialisms involved in their care and exhausted by the many different clinics they (and often their spouses as well) are asked to attend. Treatment adherence is a challenge for many. As a result, ever more vulnerable and complex patients may not receive the comprehensive, individually optimised, evidence-based, care that can make a difference for them, health care systems and societies. The apparently ever growing numbers of emergency department visits, hospital admissions and re-admissions are the result of the interaction between these and other factors.

What can we do about it? Stewart and colleagues propose one possible solution in this issue of *Circulation*.<sup>8</sup> In a remarkable report, they summarize the results of three trials and many years of work testing the value of nurse-led, multi-disciplinary, home-based intervention in cardiovascular diseases. They found that this intervention led to large relative and absolute risk-reductions in death and hospital admission in patients with heart failure, atrial fibrillation and other cardiovascular diseases (mainly coronary heart disease). Critically, the primary

clinical outcome examined by the authors, days alive and out of hospital (or days of hospital-free survival) is a particularly objective and robust measure of total mortality and morbidity, resembling all-cause death or all-cause hospitalization in a traditional time-to-first-event analysis but also taking account of recurrent non-fatal events. The benefits of this type of patient-centred intervention involving human beings rather than machines have already been particularly well documented in heart failure and stand in striking contrast to a number of different attempts to find a technological alternative that can deliver the same benefits in heart failure.<sup>9-12</sup> The present report extends the evidence for home-based intervention to other cardiovascular problems, although, in truth, this is hardly surprising given that few patients have heart failure, atrial fibrillation or coronary heart disease in isolation and many have all together and usually more problems as well. As always, innovative clinical research like this raises more questions. The numbers of patients and events (especially deaths) was relatively small. The trials were conducted by the same highly expert team in one country with a particular type of health care system. For cardiologists used to reading about the effects of a drug or a device, the nature of the intervention seems complex and cannot be described in a few words. Because the intervention is multifaceted, which, if any component, is more or less important has been the subject of question, if not controversy, especially the “home-based” i.e. home visiting component.<sup>13-15</sup> In some cultures, the nurse who is an expert in disease management and also a prescriber is still not widely accepted. In others, home visits might not be possible. However, in others such as Germany, disease management programs for coronary heart disease and even non-cardiovascular diseases such as diabetes are more or less universal.<sup>16</sup>

Where do we go from here? The value of disease management programs for heart failure is widely accepted and endorsed by guidelines.<sup>17,18</sup> Indeed, they may offer the best unified

framework for putting guidelines into practice (which may account for much of their success) and joining up disjointed health care systems. However, the content of these programs varies and implementation is restricted to certain regions of the world. Guidelines generally require multiple studies to give the strongest endorsement to treatments. Therefore, it would be good to see the authors' findings in atrial fibrillation and other types of cardiovascular disease replicated elsewhere and blueprints for such interventions exist, although, in truth, each of these programs would inevitably incorporate management strategies for the other problem (and heart failure as well) because many patients have two or all three problems and the interventions are, by definition, holistic.<sup>19</sup> Financial support for such non-drug, non-device interventions of no interest to industry is notoriously hard to come by and there really is no mechanism to fund what is really needed i.e. large, prospective, multi-center, multi-national, randomized controlled trials. Maybe technology (which on its own has largely failed) can be integrated into such programs and funding found in that way. Eventually, however, governments, health care providers and payers will have to look for a solution to the problems described at the start of this article and Stewart et al have provided them with a glimpse of what the future might look like if they are prepared to invest in proving it.

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